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Polaroid. Promotional images
for the Polavision system,
1977. Polaroid Corporation
Administrative Records, Baker
Library, Harvard Business School.



Instant Failure: Polaroid's Polavision, 1977–1980

ERIKA BALSOM

“An Instant Dud for Polaroid”: the title of the April 16, 1979, *Newsweek* article captured the prevailing sentiment about Polavision, the instant motion-picture format introduced only two years earlier after more than a decade in active development.¹ With a camera using cartridges containing Super 8 mm film and a twelve-inch rear-projection playback device that doubled as a developing chamber, Polavision was a proprietary system for shooting, processing, and exhibiting film—a resurrection of the triple functionality of the Lumière Cinématographe—that was first made available to the amateur arena in 1977 for an introductory list price of \$699 (\$2,785 in 2016 dollars).² The cartridges could hold three thousand feet of silent “phototape” (as Polaroid called it), which could be edited only in-camera, producing a color image through an additive process recalling the Dufaycolor process used by Len Lye in the 1930s. When the cartridge was popped into the top of the viewer, the rewinding of the exposed film punctured a reagent pod, releasing developing chemicals. In only ninety seconds, two minutes and thirty-five seconds of film was ready to be played at eighteen frames per second.

Polavision promised instantaneity, simplicity, and efficiency; it significantly limited the variables involved at each stage of the filmic process in the hope of enabling virtually anyone to make and exhibit movies. User participation was encouraged not by offering flexibility and customization but by severely curtailing the need for skill and decision making. To appropriate the language of computer coding, Polavision operated at a higher level of abstraction than a typical film system in that it automated processes that would otherwise require manual operation. Polavision offered a complete and closed ecosystem and embraced reduced functionality in an attempt to democratize production. Its constraints asserted themselves aggressively. But through this, the format courted the impression of immediacy, as the user would not be nagged by the many questions that habitually accompany film production and exhibition, such as how long the film should be, what lens to use, where to develop the film, how to edit it, or where to project it.

Despite Polavision's simplicity and its anticipation of a prosumer

user experience that has since become widespread, Louis Lumière's declaration about his short-lived Cinématographe would prove true of its late-twentieth-century descendant too; it was an invention without a future. The *Newsweek* reporters canvassed for reactions. "'This is an all-time turkey,' grouses the manager of a large photo-products store in Chicago. 'It's a real dud.'"³ Marvin Saffian, a Wall Street analyst, was no less forgiving, matching Polavision's triple functionality with a triple condemnation: "Polavision is just the wrong product for the wrong market at the wrong time."⁴ After costing an estimated \$200 million in research, development, production, and marketing, the commercial failure of Polavision culminated in September 1979 with a \$68.5 million write-down to a nominal value of the remaining inventory and standing commitments to Eumig, the Austrian manufacturer of the hardware. By the end of the year, some retailers had cut prices by as much as 60 percent.⁵ However, during its brief life, Polavision would draw interest from experimental filmmakers such as Stan Brakhage, Morgan Fisher, and Andy Warhol—figures whose engagement with the format would both make claims as to its specificity and take it far beyond Polaroid's anticipated uses.

Polavision could easily be consigned to the media-historical dustbin, seen as little more than a passion project of Polaroid founder Edwin Land that ill-advisedly came to market two years after the introduction of Betamax. Instant film was a doomed product in the age of video; in this regard, Polavision appears as a prolepsis of the fate met later by Polaroid's still cameras at the hands of the digital. But unlike Polaroid photography, which has recently received significant attention, Polavision has been overlooked, aside from a pioneering consideration by Elizabeth Czach.⁶ And yet, there is ample reason to reconsider the quirky episode of instant movies, and not simply because new research materials have become available since Czach's 2002 article. Polavision's reappraisal chimes with the archaeological interest in failed media—what Bruce Sterling called in 1995, "media that have died on the barbed wire of technological advance, media that didn't make it, martyred media, dead media"—due to their ability to question hegemonic logics of innovation by raising the specter of untaken paths and unfulfilled futures.⁷ But pursuing such a variantology of the media, to use Siegfried Zielinski's phrase, must do more than simply produce a catalogue of curiosities. Turning to Polavision resonates, too, with what Jonathan Sterne calls "format theory"; namely, an approach that "ask[s] us to modulate the scale of our analysis of media somewhat differently," paying attention to the technical systems, infrastructures, and standards that constitute formats rather than emphasizing content or the larger category of the medium.⁸

The idea of format is closely aligned with the study of digital

media. Sterne, for instance, develops the concept in the context of his book on the MP3. Why this heuristic would be useful for the analysis of digital devices should be clear: such devices throw into crisis traditional conceptions of the medium by accommodating numerous platforms and file formats within a single machine. And yet, format theory is tremendously useful for the study of analog media, as it entails adopting a more granular level of analysis than is conventional, breaking apart an entity such as “photochemical film”—often erroneously discussed as if it were a single thing—to reveal the varied technologies encompassed by this category and the diverse experiences and ecologies to which they give rise. Polavision is a particularly fascinating object in this regard, as it rejects many of the characteristics often thought of as fundamental to photochemical film and is thus especially well positioned to respond to the pressing imperative to recover the historical heterogeneity of cinema. As Haidee Wasson writes, “The cinema we have long loved and often naturalised in our theories and histories is a highly specific one, utterly dependent on a normative industrial ideal that belies the contingency shaping one particular, persistent technological settlement.”⁹ What is dominant is too often misrecognized as what is essential. This naturalization occurs in numerous fashions, but today the construction of a monolithic notion of cinema often takes shape as the long-standing stability of its historical material support (photochemical film) and normative exhibition situation (the movie theater) are invoked in opposition to the manifold formats, traveling images, and flexible apparatuses of the digital. As this narrative would have it, the analog-to-digital transition is one from the singular to the multiple, from a sole cinema to many multimedia environments. However, as Wasson emphasizes, there has long been more than one cinematic apparatus, and the cinema has long been “reconfigured, rearticulated and recombined” across diverse technical supports and locations.¹⁰ Considering a marginal format like Polavision allows one to illuminate these processes, to unsettle received ideas and install in their place a more nuanced and historical account of the non-self-identity the cinema has always possessed. Following Wasson’s call for “understanding cinema as a family of formats,” Polavision emerges as that odd cousin twice removed: a family member quite different from the rest of the clan and usually forgotten but whom it would be rude not to invite to a major gathering.¹¹

I.

The dream of Polavision is as old as instant photography. When Land first demonstrated Polaroid’s one-step still cameras in February 1947, the idea that the same technology might be deployed to make instant movies was already on his mind. He emphasized that his process

was “inherently adaptable” and might be used “for making motion pictures.”¹² According to Peter C. Wensberg, senior vice president of marketing at Polaroid from 1971 to 1982, Polavision was “developed by [Land’s] fiat”; “The *why* was never examined.”¹³ Land described the system as “one of our earliest and most challenging dreams,” which “in coming to maturation has utilized all of our own accumulated understanding” and “issues not only from the persistent vision of a few people, but also from the enthusiastic efforts of hundreds.”¹⁴ Polavision would be both Land’s last significant undertaking after decades of invention and his greatest failure.

Following years in development under the code name “Sesame,” the system became public knowledge without Polaroid’s approval in the March 1974 issue of *Popular Science*. Reporter Robert Gorman, having researched recently filed patents in an effort to speculate on what Polaroid’s next major offering would be, produced a remarkably accurate picture of the system that would be named Polavision one year later, including a detailed diagram of what the cassette’s interior workings might look like.¹⁵ In response, Polaroid’s Eelco Wolf issued a memorandum to all publicity managers on March 7, setting out the company’s position in case of any press inquiries: the as-yet-unnamed product was part of the corporation’s ongoing research into instant transparencies, still in the development stage, and did not yet possess “any marketing dates or timetables.”¹⁶

Polavision’s public launch occurred three years later on April 26, 1977, in the presence of some 3,800 stockholders and two hundred members of the press at Polaroid’s fortieth annual meeting in Needham, Massachusetts. Attendees were given cameras and encouraged to film the jugglers, mimes, and members of the Boston Ballet Company who had been called in to perform. They could then instantly develop their cartridges and view the results. Following this carnivalesque demonstration, Land addressed the crowd. “The new system,” he said, “is a way to relate ourselves to life and each other.”¹⁷ In subsequent promotional copy, this social dimension was repeatedly emphasized, with Polavision trumpeted as producing “living pictures.” A memorandum produced to accompany the European introduction of the system is representative: “Polavision offers besides home entertainment, real opportunities to be creative, active, and to stay away from the tube, which is eating into so much of people’s leisure time. . . . It activates people, brings social involvement, stimulates family-life, and opens communication.”¹⁸ Unlike the supposedly passive reception of television, Polavision offered active creativity in the home and, through the feedback mechanism of its (near-)instant playback, the possibility of collapsing the stages of production and exhibition into a single, shared encounter of intimate sociality.

The idea that the specificity of Polavision might reside in its

relational possibilities emerges as particularly significant when one compares how radically different these are from those of more conventional film formats. What one might call the cinema's circulatory reproducibility—that is, its ability to be distributed to diverse publics through the production of multiple copies—has long been held to be one of its central attributes as a medium and is inextricably tied to its social function. Polavision performs a double withdrawal from what Walter Benjamin discerned as the tremendous exhibition value of cinema, understood dialectically as both the reservoir of its utopian potential (mass culture as collective enervation) and the harbor of its most dystopian possibilities (mass culture as mass deception).¹⁹ First, like many other small-gauge formats, Polavision relocated the film experience into the domestic realm, thus taming its potential to act as an alternative public sphere and opening onto other forms of relationality, in this case closely tethered to the act of filming and viewing with friends and family. But second and perhaps more important, Polavision produced a unique object. Like Polaroid photographs, Polavision cassettes could not be duplicated (short of scanning or rephotographing them on another format), distinctly tying the format to private ownership and situating it far outside the economy of the multiple that the cinema has historically inhabited.²⁰ Though the film inside the cassette was the same size as Super 8 mm, it was unable to be projected on Super 8 mm projectors due to the thickness and opacity of the filmstrip, which resulted from its additive color process.

While Polaroid photographs can be easily given away and thus circulate far from the apparatus of their production and its owner, Polavision depended absolutely on the playback apparatus to be viewed. While one could trade cassettes with another owner, the strong likelihood was that Polavision films would remain closely bound to their producer, making it in some sense a proprietary format twice over. Polaroid fabricated the system hardware to be incompatible with any existing film technologies, giving the corporation end-to-end control. But such a notion is also an apposite description of the user's relationship to the apparatus, as within Polavision's limited parameters the entire production-distribution-exhibition complex occurs without the intervention of any external agents, in a tightly bound circuit. This restricted circulation suggests that Polavision's investment in nurturing relatedness had little to do with advancing any notion of a democratic public sphere of shared media experience. Rather, it suggests a privatized sociality that might serve as a remedy to an increasingly fragmented family unit. Understanding Polavision as a wholesome domestic activity resulting in the production of lasting memories was to conceive of it as reparative technology, a form of social glue.

Polavision sacrificed circulatory reproducibility so as to emphasize film's referential reproducibility—the image's intimate closeness to the profilmic scenes it captures. While this closeness has often been understood according to the notion of the indexical trace, Polavision made its claims for proximity to the profilmic not simply through this spatiomaterial relation of touch but via the temporal category of the instant. Instantaneous development enabled the reception of Polavision cassettes to function as immediate feedback, offering a reflective experience of a situation perhaps still ongoing, which might then be rethought, modified, or otherwise acted upon depending on what one witnessed onscreen. This temporality was understood as a key element of the specificity of the then-emerging medium of video and has since become a major feature of vernacular uses of digital video, particularly as circulated on social networking platforms. Polavision broke from film's firm alignment with pastness to instead approach these looping circuits. Its closing of the interval between exposure and exhibition was given graphic metaphorization in Polaroid's promotional images depicting a movement on the Polavision screen exceeding the frame to occupy the surrounding “real” space as well, as if to suggest that the movement occupies the profilmic and filmic realms simultaneously, temporally proximate as they are. In one such image, a white bird's wing breaks through the right of the frame while its body is onscreen; in another, the image onscreen shows a boy holding a beach ball, while three more such balls extend above the top of the frame, as if to suggest a trajectory of movement that breaches the picture plane. “Living pictures,” indeed.

II.

In the summer of 1977, Charles Eames and Ray Eames began work on a promotional film for Polavision, continuing the relationship with Polaroid that had commenced in 1972 when they were commissioned to make a film about the SX-70, the instant camera Polaroid introduced that year to great success. Ted Voss, vice president of marketing, began to discuss the Polavision project with the Eameses as early as January 1976. By the time Polavision launched in California in November 1977—five months before it was available nationally—the ten-minute *Polavision* was finished, and the Eames Office in Venice, California, served as the location for three days of press visits.



Polaroid's objectives in branding Polavision are nowhere as clearly articulated as they are in *Polavision*. The film reinforces the emphasis on privatized sociality that runs through Polaroid's corporate literature, staging its uses of the system primarily within a suburban, nuclear family context and suggesting that "perhaps in the long run the greatest value" will not be the films themselves but "will be something that grows out of th[e] experience" of making and watching them together. Polavision was a social medium *avant la lettre*, albeit one of intimate circulation. Contrary to the cinema's unidirectional reception, Polavision's sociality was overtly participatory and marked by multiple vectors of interaction between what would today be called "prosumers." Polavision was not something to watch; it was something to *do*. This experience, rather than the quality of the filmic product, was its locus of value.

Like *SX-70* (1972), *Polavision* employs voice-over narration and a whimsical soundtrack by Elmer Bernstein to stress the ingenuity and creativity of Polaroid technology, while offering basic instructions for use. Key differences between the two films, however, index Polaroid's understanding of the respective marketing needs of each product. *SX-70* devotes a substantial portion of its ten-minute duration to an in-depth explanation of the intricacies of the camera's functioning and shows many possible methods and purposes for producing photographs without advocating in favor of one over another. *Polavision* presents the system as a technology about which it is unnecessary to know much, if anything, of its internal workings, while advancing a particular prescription for how to use it successfully. *Polavision* thus addresses the user of the system as a barely competent amateur—indeed, children are extensively featured—positioned at some distance from the technologically curious photographer addressed in *SX-70*. This might be due to the relative rarity of proficiency in filmmaking when compared with still photography, but it also suggests a concerted strategy to transform Polavision's limitations into benefits for the user. Polaroid and the Eames Office decided to avoid indulging power users' interest in the complexities of hardware and instead forged an analogy between Polavision's absence of complication and the simple happiness of idealized family interaction.²¹

The pedagogical thrust of *Polavision* prescribes a single strategy for success not emphasized in Polaroid's own copy: planning. In a 1981 draft for an article on the Eames Office's involvement with Polaroid, staff member Jehane Burns wrote,

The "limitations" of Polavision—the short tape, the need to edit in the camera and not afterwards—were more than half the magic. Immediate reward for good planning—that was the

Polaroid. Promotional image for the Polavision system, as published in *Close Up*, Polaroid's in-house magazine, 1978. Polaroid Corporation Administrative Records, Baker Library, Harvard Business School.

first moral, and it made Polavision one of the most powerful learning—self-educatiing? [*sic*—devices that ever came into the office.²²

Here the emphasis is again placed not on the value of Polavision’s material outcomes—that is, the notion that it might result in quality films—but on its ability to produce a particular experience for the prosumer: not only family interaction but self-education through feedback. Burns’s notion of “good planning” pervades *Polavision*, as the film prescribes strategies for vanquishing the capturing of contingency that one might think of as central to the home movie. Since footage shot on Polavision could not be edited later, it became all the more imperative that the processes of selection and sequencing be displaced from postproduction to preproduction.

Polavision opens with a man and a woman shooting a production of *Macbeth* performed by children, with each scene storyboarded on paper. Later, a brief interview with animator William Hurtz, “one of the great storyboards,” reassures the viewer that no skill in drawing is needed to create a successful storyboard—just an aptitude for parsing the main elements of a scene. The chase is suggested as a suitable narrative for the format, and the production of a clear beginning, middle, and end is deemed a “satisfaction” and “challenge.” *Polavision* also showcases how in-camera editing can be used for stop-motion animation, time-lapse, and trick effects—all techniques that rely on taming the potential spontaneity of recording and that serve to break the flow of real time. In short, Polavision is presented as a tool that might help one to develop skills of organization and systematization—aptitudes of significant value in grappling with life in the electronic age. In this regard, the Eameses’ approach to the format is very much in line with their established interest in training the sensorium to operate successfully in information-rich environments, particularly through forms of media pedagogy that turn to cinematic practices beyond the standard apparatus.²³ As much as *Polavision* wistfully partakes in a nostalgia for the simple joys of the family and the wholesome hobbyist (woodworking and knot tying are featured), it equally asserts a distinct contemporaneity in its rhetoric of self-improvement through feedback. The film proclaims the neces-



sity of segmenting intractable phenomena into discrete units to facilitate management and intelligibility—processes that Seb Franklin argues are constitutive of a digital logic of control even when pursued through means that do not depend on digital media technologies.²⁴ By situating the instillation of these new forms of organization within the family unit, the Eameses suggest a wholly administered existence: the totality of life, even seemingly private experiences far from the domain of wage labor, is taken to be open to modulation in the interests of efficiency and productivity. Here, one finds an understanding of Polavision that supplements Polaroid's notion of the format as a reparative technology that might rehabilitate and restore an imperiled family idyll. At stake is a late version of what Justus Nieland calls the “Eamesian happiness” that emerged at midcentury: a contradictory, liberal happiness requiring calculation, one that is instrumentalized within a “coercive, postwar technocracy” so as to remove the “hap”—the unpredictable contingency—that might seem to be a constitutive part of happiness.²⁵ In the place of such capricious pleasures, one finds a normalizing modulation of behavior tied to planning and predictive models.

This proposed development of highly contrived scenarios went against predominant practices of home moviemaking, as noted in a document titled “Summary of Home Moviemaking Behavior,” produced by Davida Carvin, a member of the marketing research department at Polaroid.²⁶ Dated December 15, 1977, and forwarded

to the Eames Office, the document summarizes Richard Chalfen's 1975 article, “Cinema Naivete: A Study of Home Moviemaking as Visual Communication,” in which the author reports that home moviemakers regularly ignore the advice of instructional manuals to plan before shooting.²⁷ Carvin suggests that in order to remedy this problem, Polaroid might offer free workshops to Polavision owners to help them develop their filmmaking skills. Though this initiative was never pursued, the Eameses' promotional film fulfills a comparable function, instructing its viewers how to take control over the profilmic, make optimal use of the cassette's limited duration, and cope with the impossibility of postproduction editing. Carvin also finds in Chalfen's research a justification for Polavision's lack of editing and its denial of circulatory reproducibility.

Opposite and below:
Charles and Ray Eames.
Polavision, 1977. Frame enlargement
courtesy USC Hugh M.
Hefner Moving Image Archive.



She reports that home moviemakers rarely edit their films, even when the opportunity is available to them, and that in both the production and exhibition of home movies, one tends to encounter “a *select* group of family and intimate friends.”²⁸ Home movies tend not to engage in the ordering and condensation of time typical of fictions but are instead made up of real-time recordings that reside outside a narrative frame. The focus on planning attempted to bring actually existing forms of home moviemaking closer in line with professional norms, to promote conformity to conventions that rely on a notion of capture as an operation of control based in selection and exclusion. And yet, Polavision’s retreat from montage approaches a second, very different idea of capture, one typical of home movies: a form of capture found in the revelatory capacity of brute recording, an operation closely wedded to the contingency that might be vanquished by the Eameses’ cybernetic happiness. Polavision’s lack of post-production editing, like its denial of circulatory reproducibility, thus demands to be understood not simply as a failure to meet a desired standard, an obstacle to be overcome, but as a form of stripping down cannily tailored to the format’s anticipated uses.

III.

The Eameses were far from the only notable figures to work with Polavision. While the use of obsolete domestic imaging technologies such as Fisher-Price’s PixelVision (1987–1988) and Kodak’s Carousel slide projector (1965–2004) by artists such as Sadie Benning and James Coleman, respectively, has received considerable attention, the lesser-known Polavision also figures as a technology closely tied to the home context and of interest to prominent figures. But unlike PixelVision and the Carousel, which were appropriated by artists after their commercial lives had either ended or at least begun to wane, Polavision’s experimental uses are contemporaneous with the height of its commercial prominence and are the result of marketing efforts on the part of the Polaroid Corporation. This departs from the well-established narrative of the artistic recuperation of obsolete technologies that might release what Benjamin called “the revolutionary energies that appear in the ‘outmoded’” to instead intersect with discussions of collaborations and between artists and industry, such as the episodes of Lillian Schwartz at Bell Labs, Stan VanDerBeek at the US National Aeronautics and Space Administration, or Peter Campus at WGBH-TV—that is, a scenario much more closely associated with the development of professional televisual and computing technologies than with photochemical filmmaking and devices made for use in the family home.

Polaroid had an established tradition of working with artists through its Artist Support Program, begun in the 1960s to supply

artists with free film and equipment in return for valuable feedback, their assistance in branding efforts (by creating favorable associations between Polaroid and creativity), and donations to what would be formalized in 1968 as the Polaroid Collection. But even before this, the corporation actively sought out the consultancy of artists. Ansel Adams began his work in this capacity in November 1949 for a retainer of \$100 per month; he would stay on the Polaroid payroll for the rest of his life, filing more than three thousand reports.²⁹ Adams shot footage of horses and stables with the Polavision system, but the company realized its first motion picture product called for an engagement with filmmakers, a group with which it had hitherto established few ties. An outreach effort similar to the Artist Support Program, though more informal, took shape. Polaroid asked for nothing in return save for feedback on the system. No contracts were signed, and Polaroid made no effort to begin a collection of films, as it had with photographs. As Sam Yanes, the corporate product publicity manager who worked with Polavision, said, the engagement with filmmakers was intended “on one hand to push the limits of the products far beyond the imagination of the technical staff, and secondly to create an atmosphere of creativity, quality, and panache—whatever artists bring to the game.”³⁰ The corporation aggressively pursued the dissemination of Polavision in the independent and experimental filmmaking communities, directly or indirectly getting it into the hands of important practitioners, including Warhol, Brakhage, Robert Gardner, Alfred Guzzetti, and Morgan Fisher.

Warhol—well known for his use of Polaroid photography and his eagerness to try out new media technologies—attended the New York launch party for Polavision in early 1978 and was photographed there with a Polavision camera in hand.³¹ From January 16, 1978, to October 18, 1979, Warhol and his associates shot forty-six cassettes, largely directionless recordings of comings and goings at the Factory, featuring celebrities such as Phyllis Diller, Lou Reed, Liza Minnelli, and John Lennon (who, not incidentally, also used Polavision).³² In these films, many people address the camera, speaking to it as if unaware that it is incapable of recording sound. Scarcely any of the Warhol cassettes fit the Eameses’ imperative of “good planning”: the camera roams among groups of people who often are in the midst of having lunch or socializing, filming without any clear itinerary. One three-cartridge series stands as a notable exception, somewhat recalling the process-based observations of Warhol’s early filmmaking and gesturing to his interest in pop iconography. While most cassettes have handwritten descriptions such as “Montauk—Halston #2” (part of a hauntingly voyeuristic three-part series shot on October 18, 1979) or “Blizzard, Second Day” (filmed out the Factory window, looking down at skiers on Manhattan streets on February 2, 1978),

Burgers on Parade (1978) is the sole instance of a proper title, indicated as such by the presence of quotation marks on the cassette label and box. Over the course of three cassettes shot on September 15, 1978, a man eats six McDonald's hamburgers lined up in front of him on a table, occasionally pausing to take swigs of a large drink and to wipe his mouth with a red napkin. The use of in-camera editing deprives this nearly eight-minute sequence of the durational record offered by a film such as *Eat* (1964), in which Robert Indiana eats a mushroom over some thirty-nine minutes (when projected at silent speed). Whereas *Eat* took the one-hundred-foot reel of 16 mm film as its basic unit of construction, *Burgers on Parade* fails to do the same with the Polavision cassette. In-camera edits elide time and thereby weaken the impact of the gross spectacle of consumption depicted onscreen, since the eater's progress cannot be as surely pegged to any determinable profilmic duration.³³

Though by no means a major work in Warhol's filmography, *Burgers on Parade* gestures to another feature of Polavision's brief existence: in addition to making home movies, the format also served as a means of making art. After gaining access to Polavision through Polaroid's outreach efforts, filmmakers put the format to uses far beyond those anticipated by the corporation during its development and marketing, "pushing the limits" as Yanes hoped they would, using Polavision to stage the moving image within the gallery space. Brakhage came across Polavision through the School of the Art Institute of Chicago (SAIC), where he was working as a visiting lecturer and where systems had been sent due to a preexisting connection between Polaroid and SAIC professor Barbara Jo Revelle. Through Fred Camper, a system was sent to Brakhage in Rollinsville, Colorado—a census-designated place naming a small cluster of dwellings in the

Below: Boxes of the Polavision cassettes shot by Andy Warhol and associates, 1978–79. Andy Warhol Museum, Pittsburgh. Photo by Erika Balsom.

Opposite: Newspaper clipping sent from Kenneth Anger to Stan Brakhage. Undated, likely April 1978. Courtesy James Stanley Brakhage Collection, University of Colorado, Boulder.



mountains about fifty miles northwest of Denver. Brakhage seems to have discussed the format with Kenneth Anger, since Anger sent him several clippings about Polavision, annotated with his handwritten comments. An advertisement from the April 13, 1978, issue of the *New York Times* bears the inscription “PROGRESS? *Look ma, no splices!” On a second ad, this time for the sale of Polavision at Macy’s, Anger expressed his position on the system more definitively: “IT’S ALL SO EASY—TO SPEND MONEY IN U.S.A. INSTANT MOVIES: JUNK FOOD PICTURES INC.”³⁴

Contrary to Anger’s skepticism that Polavision was a high-priced way of deskilling the labor of filmmaking, Brakhage was extremely enthusiastic about the format, putting it to use in precisely the family context of privatized sociality foregrounded by Polaroid and the Eameses. For a filmmaker living in the mountains, Polavision was poised to provide a family activity, but it also offered Brakhage a means of making films that accorded with the values of intimacy and individual production he had long espoused and buttressed his conviction that the home should be considered a site of cinema as—or even more—important than the movie theater. Though the films Brakhage and his children made have been lost, surviving letters testify to his engagement with Polavision and his unfulfilled plans to use it in what would have been an innovative form of experimental film distribution. In a letter to Camper, Brakhage lists the Polavision films he had previously shown to Camper, giving credit to his children’s efforts where due.³⁵ These titles, absent from all existing Brakhage

filmographies, including the catalogue raisonné published in 2016, are: #4 *Bear by Rare* (October 16, 1978), #6 (Neowyn Brakhage, October 16, 1978), #7 *Room to Room* (October 19, 1978), #8 *In and Out* (date unknown), #12 *Night + Day* (October 22–23, 1978), *Tri Part-Something* (date unknown), *A Snow Night Parts I + II* (Bearthm Brakhage, date unknown), *Portrait of Forrest* (December 17, 1978), *Bob Benson’s Madonnas #1 + #2* (December 22, 1978), *Memory Fog* (date unknown), *Dying Animal* (January 16, 1979), *February’s Bloodstream* (Neowyn Brakhage, February 12, 1979), *Music #1* (March 18, 1979), *Little Poems* (anonymous, March 24, 1979), and *My Vision* (Crystal Brakhage, March 25, 1979). The numbering of these titles suggests that Brakhage shot additional cassettes beyond those he showed to Camper.

In January 1979, Brakhage wrote to Yanes at Polaroid, giving a detailed account of his “most rewarding” experience with the “great discovery”

IT'S ALL SO EASY—TO SPEND MONEY IN U.S.A.

INSTANT MOVIES:
JUNK FOOD PICTURES INC.

instant movies are here!

Polaroid's new Polavision lets you see your movies minutes after they are taken! Just shoot ... drop the phototape cassette into the player and seconds later, full color instant movies are yours. The phototape cassette drops into your camera easily for instant movie making. When done, drop it into your Polavision movie player where it develops in seconds and is shown right on its own screen. Simple? You bet. No screens to set up ... no film to thread or knobs to adjust. Just enjoy! Camera \$190 Movie player/developer \$410 Two-light movie light \$30 Camera and accessories case, \$28 Phototape cassette, \$9
Pay 21.50 for 35 month for camera plus movie player



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of Polavision.³⁶ “I have, at great and joyful labor, accomplished several complete films which are nearly as perfect (in my tough estimate) as one might reasonably expect from, say, a sketch or water-color technique.” He calls it “a great pleasure to have Mr. Land’s genius revolutionize [his] area of making” after already having done so for still photography. Brakhage notes that he would prefer a more flexible camera with the possibility of using a greater variety of lenses, and to this end he asks Yanes to keep him informed about new additions to the line. In general, Brakhage saw Polavision’s so-called limitations as its greatest assets, for they advanced a conception of, as he wrote, “Film as an Art Object.” Brakhage found in the specificity of Polavision implications wholly other than those imagined by Polaroid. First, he believed that the cassette’s uniqueness made it an ideal way for film to become a collectable art object, since it made the moving image amenable to the symbolic and financial economies of art. Second, he saw the lack of postproduction editing as encouraging precision and artfulness, describing it as “the greatest incentive to *thoughtful* motion picture photography which has existed since the birth of Film.”³⁷ Unlike the “video mentality which is the greatest corrupter of thoughtful picture-taking,” Polavision required and promoted a “discipline of photographic attention.”³⁸

Czach argues that Polavision can be seen as “the missing link” between film and television, given that it shares characteristics of both.³⁹ Indeed, the format is often aligned with video despite its filmic substrate: its filmstrip is called “phototape,” it is catalogued in the archives of the Andy Warhol Museum as part of the video collection, and it has even been perplexingly referred to as “laserdisc” and “early DVD.”⁴⁰ In “The Promise of Polavision,” Polaroid deemed the system “the video counterpart of the now ubiquitous audio cassette tape recorder.”⁴¹ Polavision’s instant playback, domestic setting, and boxy, television-like apparatus served to forge an association with video. And yet, Brakhage positioned Polavision in clear opposition to video, as was usually the case for Polaroid. Notwithstanding the passing remark about Polavision as a “video counterpart,” “The Promise of Polavision” casts video in an unfavorable light, deeming it “bulky, expensive, and complicated to use” and “requir[ing] a rather high degree of expertise and training” when compared with Polavision.⁴² One might diagnose this position as an opportunistic way of targeting a specific audience—one invested in simplicity over functionality—for a format that was in some sense already outmoded by the time it appeared on the market. But for Brakhage, who most certainly did not fall into this target group, the advantages of Polavision lay elsewhere. Compared to the videotape’s surfeit of time and the increasing complexity of video cameras, Polavision created an urgency and an opportunity for a modernist confrontation with

material limitation that Brakhage believed led to thoughtfulness and discipline. As Charles Eames had argued decades earlier, “All freedom is too big”; true creativity would come from “knowing an objective and working within restraints.”⁴³ Contrary to Anger’s notion that Polavision resulted in “junk food pictures,” Brakhage, like Eames, saw the brief duration of the cassette as summoning the filmmaker to be judicious in his or her use of it, to find freedom in constraint. Brakhage did not advocate for planning in the manner of the Eameses, instead understanding Polavision as a format able to spark the filmmaker’s powers of intuition and observation by concentrating the act of creation in a single moment and disallowing any “second thoughts.” Though Brakhage’s investment in the format had little to do with the possibility of feedback, he shared with the Eameses an interest in creativity founded in a productive relationship to limitation; yet unlike them, he was interested not in taming the unruly field of the profilmic but in engaging with the specific qualities of the medium in an immediate creative encounter.

Brakhage’s endorsement of craft and his advocacy for a form of filmmaking that would be understood as possessing an artistic status comparable to the finest poetry or music will sound familiar to anyone who has encountered his writing or correspondence. But his interest in the notion that the Polavision cartridge might make film salable as a unique object in art galleries is surprising given the lack of interest in participating in the structures of the art market he otherwise displayed throughout his lifetime. Brakhage told Yanes he planned to ask Gallery 609—a commercial space in Denver run by his high school friend Gordon Rosenblum—to offer “one or two” of his Polavision works for sale, along with their players, “the same as they are selling paintings or sculptures.”⁴⁴ Brakhage had long taken an active interest in trying to develop alternatives to the distribution and exhibition models that prevailed in experimental film, understanding the ephemerality of public exhibition as incompatible with the extended time necessary to appreciate artistic achievement. In the mid-1960s, he was interested in the possibility of using 8 mm as a distribution format that would enable the sale of prints to home viewers for affordable sums. Though the initiative did not meet with widespread success, Brakhage advocated passionately for this home cinema on the grounds that it would allow films to be viewed repeatedly and intimately, just as a poem must be read multiple times to be truly appreciated.⁴⁵ But he was equally interested in the notion that 8 mm reduction prints would allow for increased circulation through the production of cheap, possessable copies. His model in the 1960s was not the unique object of the art market but the publishing of books and records. His love of Polavision resurrected this dream but notably left behind the prioritization of access that marked his earlier

investment in 8 mm. The domesticity of Brakhage's experiments with Polavision was already firmly in line with the privatized sociality imagined by the Eameses, but in this distribution decision he took an additional step toward the fulfillment of the format's proprietary logic, producing works intended for sole private ownership. Though Brakhage did not quote a price range for the Polavision works, he would be selling a unique object *and* a playback system, and thus one can assume an amount orders of magnitude higher than the \$30 (\$20 for members) price for Grove Press's unlimited 8 mm edition of *Lovemaking* (1967). Despite Brakhage's excitement, the exhibition at Gallery 609 never took place. When Yanes replied on January 30, 1979, he said he had still not heard from the gallery. And though Brakhage may not have known it, by that time Polavision's future was already beginning to darken.⁴⁶ Nevertheless, his unfulfilled plan to sell Polavision cassettes as unique artworks is notable, for it inserts him into a sphere of activity and a trajectory from which he is generally understood to have otherwise abstained, if not outright opposed: the art context and its development of a commercial market for moving image artworks through the imposition of scarcity.

In his letter to Brakhage, Yanes mentions that he had "been considering an 'art' show of Polavision films for some time and hope[d] to pursue this in the near future."⁴⁷ Just as the initiative to supply free Polavision products to filmmakers continued a culture well established at Polaroid in relation to still photography, so, too, was Yanes's idea a logical extension of the company's practice of holding exhibitions to showcase what amateur and professional photographers had accomplished with their cameras. In 1973, Polaroid opened the Clarence Kennedy Gallery at its main headquarters on 784 Memorial Drive in Cambridge, Massachusetts, to hold exhibitions, including presentations of employees' work and displays curated from the Polaroid Collection, which comprised some 16,000 pieces by the time of the company's 2008 bankruptcy. Though the Polavision art show would never take place, the format did feature prominently in one exhibition, on view precisely when Brakhage and Yanes were in correspondence: a retrospective honoring Josep Lluís Sert, the Catalan architect and director of Harvard University's School of Design from 1953 to 1969. Held at Harvard's Carpenter Center for the Arts from December 2, 1978, to February 1, 1979, Josep Lluís Sert: Architect to the Arts focused on three of Sert's major buildings—the Spanish Pavilion at the 1937 Paris Exhibition, the Maeght Foundation in Saint-Paul-de-Vence (1964), and the Miró Foundation in Barcelona (1975)—as well as his relationships with artists such as Alexander Calder and Alberto Giacometti. In addition to architectural models, photographs, slide projections, and artworks, the exhibition featured seventeen Polavision players exhibiting cartridges shot by Guzzetti

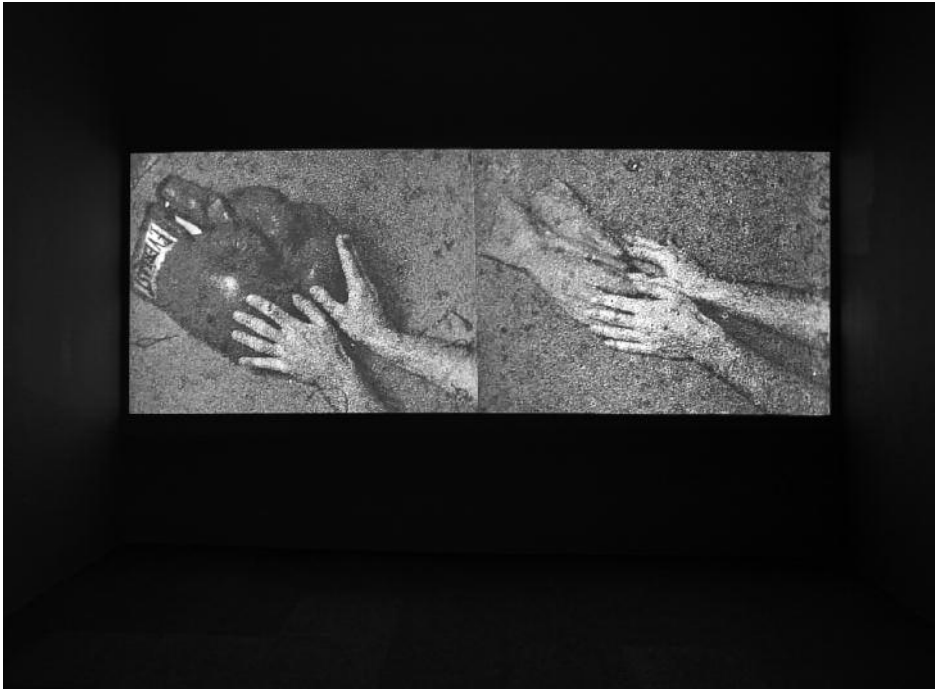
and Gardner, both Harvard faculty at the time. Polaroid contributed \$9,000 in sponsorship to the exhibition, which took place a mere 1.1 miles from its offices.⁴⁸

Gardner had originally planned on incorporating 16 mm footage into the exhibition but was happy to use Polavision, finding it “very much more adaptable to exhibit use” than 16 mm. He was also keen to benefit from Polaroid’s largesse, telling Sert, “Polaroid has plenty of MONEY.”⁴⁹ Initially, Polaroid promised to modify the Polavision camera for Gardner and Guzzetti so as to offer them a greater diversity of lenses (particularly a wide-angle lens), the ability to control the exposure, and the possibility of mounting the camera on a gyroscope stabilizer.⁵⁰ Polaroid never delivered on the promised modifications, but the filming went ahead nonetheless, with Gardner shooting Sert’s buildings in Cambridge, while Guzzetti went to France and Spain to shoot the architect’s work there, demonstrating the system for Joan Miró during a visit to film his studio. For the exhibition, the Polavision players were adapted to play on loop, set on shelves, and recessed into walls with windows cut out to reveal the screen, hiding the player from view and the possibility of visitor manipulation. Whereas Brakhage saw Polavision’s amenability to the art context as lying primarily in its status as a unique object, the Sert installation shows a second affinity at the level of exhibition design: Polavision could be used to create an automated, spatialized, multi-screen *dispositif*. Lest one assume these two qualities together make Polavision an ideal format for gallery exhibition, recall that they are inherently in tension with each other: the looped display might be appealing in its ease but over time would lead to degradation of the image, with no ability to strike a new copy.

The Sert cassettes document the architect’s work in an objective manner, giving precedence to the display of architecture over any experimentation with filmic technique. And yet, one’s attention is frequently drawn to the format itself, not because of any choices made by Gardner and Guzzetti but because of the distinctive graininess of the image and its occasional disintegration into a blotchy, colored surface. The images frequently appear to possess a skin of amoeba-like organisms that have been subjected to microscopic enlargement, a result of Polavision’s unique color process and the at-times uneven application of developing chemicals. These visual characteristics of the format are amplified in what is perhaps the most fully realized extant work made in Polavision, Morgan Fisher’s *Red Boxing Gloves/Orange Kitchen Gloves* (1980). Never exhibited in its original format, it first showed at Raven Row in London in 2011 as a two-monitor video installation after having been transferred at Colorlab in Maryland. Since then, due to the artist’s preference, it has been exhibited as a two-channel projection.⁵¹ In 1980, Fisher was

invited to take part in *Film as Installation*, an exhibition curated by Leandro Katz at the Clocktower Gallery in New York. Featuring artists such as Ericka Beckman, James Benning, and Jack Goldstein, its title was somewhat deceptive: the show consisted of models, drawings, photographs, and so on, related to the idea of film as installation; that is, any form except film installation proper, which was deliberately excluded. Fisher, living in Cambridge, Massachusetts, at the time, booked an appointment in Polaroid's large-format studio with the plan of producing a diptych of stills using the compositional device of the pendant pair that would be exhibited at the Clocktower as preparation for an absent film. After taking these photographs, the Polaroid technician asked Fisher if he would like to shoot a film version with Polavision, and he agreed.

The resulting work partakes of a play of similarity and opposition that is at once strangely fascinating and amusing. Despite the fact that Fisher's encounter with Polavision was accidental, given the format's intended place in the home it is striking that the composition is in part marked by domestic iconography and might be understood as a subversive figuration of that perennial domestic theme, the battle of the sexes. On the left, hands massage zaftig boxing gloves against a green background; on the right, the same hands caress flaccid kitchen gloves against a blue background. The intensely grainy image possesses a haptic tactility that mirrors the work's subject matter. The chromatic contrasts are echoed by a semiotic antithesis: a violent and public spectacle of masculinity on the left, a mundane and homely femininity on the right. But a reversal is simultaneously at play: the gloves are touched in ways that transform them into graphic puns on body parts belonging to the gender opposite to the one with which they would generally be associated: the boxing gloves appear as breasts and the fingers of the kitchen gloves as limp phalluses.



Far from the expressivity Brakhage relished and felt was amplified by Polavision, Fisher had long engaged deeply with industrial norms and predetermined structures as part of an effort to eliminate subjectivity. These preoccupations stay strong in *Red Boxing Gloves/Orange Kitchen Gloves*. Fisher has always been a filmmaker of format rather than medium, as evidenced by films such as *Production Footage* (1971) and *Standard Gauge* (1984), which reflexively insist on the internal heterogeneity of the category of film by investigating its diverse industrial determinations. If Brakhage's modernism resided in a notion of creative freedom generated from material constraints, Fisher's is to be found in an interrogation of the diversity of material supports encompassed in the term *film*. Like many of Fisher's works, *Red Boxing Gloves/Orange Kitchen Gloves* takes the single reel as its basic compositional unit, but it attenuates the effect of this decision through its use of the loop. Nor does it engage with Polavision's instantaneity in any way. Rather, Fisher's reflection on Polavision qua format emerges in his use of color. In their rich saturation, tremendous density, and unique texture, the hues of *Red Boxing Gloves/Orange Kitchen Gloves* return one to a consideration of Polavision's anachronistic dependence on an additive color process.

Most color film processes are subtractive, reconstructing the color spectrum on the material of the film through stratified emulsions, each sensitized to a different color. Polavision, by contrast, resurrected a long-abandoned means of generating photographic color that dates back to James Clerk Maxwell's experiments of the 1850s: an additive process that resolves color in the eye of the beholder.⁵² Polavision film consists of a silver halide emulsion covered by a fine array of lines of alternating colors—3,000–4,500 lines of red, green, and blue per inch. When shooting, these lines function as filters, resolving incoming light into its primary components and preserving a latent image of each on the emulsion. When the developed film is played back, light passes first through the black-and-white base image and then through the lines so as to reconstitute a color image. Like a pointillist painting—or, perhaps more apt given Polavision's affinities with video, like a cathode-ray tube television—color blends in the eye, not in the image. The layers involved in this process caused the filmstrip to increase in thickness and become so opaque that the image is scarcely visible on the strip when held up to light. The film looks almost like videotape. For projection, a tremendously bright light source and a plastic prism built into the cassette to concentrate the light are necessary to realize the image. Polavision was thus restricted to a small scale not because this was most suitable for home viewing but because it was simply not possible to produce an adequately luminous image at a longer throw.

By exhibiting *Red Boxing Gloves/Orange Kitchen Gloves* as a

Morgan Fisher. *Red Boxing Gloves/Orange Kitchen Gloves*, 1980. Two-screen projection, with two loops of Polavision cassettes transferred to DVD, color, silent, 18 frames per second, 3 minutes 20 seconds each. Courtesy the artist.

digital projection, Fisher moves away from the material specificity of the scalar confinement dictated by Polavision's additive color process. But in magnifying the image, he exacerbates its pointillist qualities, revealing its unique textures and pushing its alternating lines of color to the point at which their synthesis begins to falter. The lines remain invisible to the eye, but the film's colors cease to appear as solid planes, revealing their contingent precariousness. Each color shows its internal difference: the green background, for instance, appears not only as green but as inhabited by pulsating flecks of pink, violet, yellow, and blue. This surface play, alongside palpable degradation, draws attention to the picture plane's double status as represented scene and flat surface. The array of colored lines on the filmstrip generates an unstable and subjective experience of only partially blended color. Fisher's deployment of complementary colors in his overall composition is thus important. In this brazen staging of chromatic confrontation, he offers a displaced figuration of the surface of the filmstrip itself, marked as it is by a clash of discrete hues that never fully resolve into a unity. The magnified movement of the grain and the enlarged lines of the color process endow the image with a vibrant and vibrating intensity that infuses Fisher's deadpan images with an erotic agitation, while also laying bare something of Polavision's uniqueness as a format.



By the time Fisher encountered Polavision, Polaroid had ceased to promote the system to the home market. The public was not much interested in a social medium that almost entirely lacked the capacity for circulation and sharing. In March 1979, a class action lawsuit was brought against Polaroid by stockholders, claiming the corporation had failed to disclose information regarding Polavision's poor performance at the time of a January 1979 stock sale by Land and Julius Silver, chairman of the executive committee. At the April shareholders' meeting, Land demonstrated a wide-angle screen meant to solve problems with oblique visibility, as well as a sound version of the system, but the latter was never brought to market. In June, a month after the first layoffs at Polaroid since the 1950s, another new version of the system was announced, this one equipped with stop-motion functionality enabling the analysis of movement. This was a last attempt to salvage investment in Polavision by rebranding its possible uses. While industrial applications had been promoted from the beginning, they had been resolutely secondary. But as evidence of failure in the home market became unimpeachable, Polaroid increasingly emphasized Polavision's more "useful" uses, eventually to the point of exclusivity. Endorsements from the

United States Olympic skiing team and the Professional Golfers' Association of America promoted the stop-motion system's ability to replay and analyze performance immediately and thus serve as a new training aid. Polavision could be used by real estate agents as part of a "property preview center," by physicians for medical endoscopy, or even by police to catch drug smugglers.⁵³ After the September 1979 write-down, Polavision left the home market, and most attempts to engage artists and experimental filmmakers ended. As Yanes noted, "We didn't have enough time to do the kind of building with artists that we wanted to do. . . . It takes a while to learn a medium."⁵⁴ The proposed industrial applications met with no more success than the home market had, and production on the Polavision line ceased. On March 7, 1980, Edwin Land resigned as chief executive officer of the company he had founded forty-three years earlier, with coverage of the event regularly citing the failure of Polavision as a significant contributing factor.⁵⁵ Polaroid would not be free of the negative impact of Polavision until 1987, when it finally lost the class action lawsuit filed in 1979 and was found liable for damages of \$30 million.

Dead media trouble the logic of innovation that dominates our culture because, perhaps counterintuitively, dead media tend to be new media—that is, media that did not last long enough to become old. But not only the obsolete gets cast onto the scrapheap. The failed format of Polavision lasted barely three years, puncturing the spurious promise of novelty—a putrid glow that shines on us today more than ever—differently but as sharply as those much-loved media forms that live long lives before they die. Moreover, Polavision asks us to question the very categories of old and new, for despite being enduringly new—no prior or subsequent format can be said to be precisely like it—it was simultaneously always already old because it was film not video, silent not sound, and additive color not subtractive. The format is a curiosity, belonging to the family of film and yet characterized by its departures from it, best comprehended in its affinities with its victorious opponent, video. But Polavision rests uneasily in its child's grave, making good on Sterling's insistence that dead media constitute the "spiritual ancestors of today's mediated frenzy."⁵⁶ Certain qualities of this instant failure, such as its prosumer sociality and modulation of quotidian behavior, would succeed by other means in the future. Yet what resonates most today about the quixotic enterprise of Polavision is its profound and enduring idiosyncrasy, its challenge to any notion of "film" as a unified object. Resurrected, it is recast as a lens through which to glimpse the heterogeneity of a cinema ceaselessly in transition.

Notes

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1. Lynn Langway and Phyllis Malamud, “An Instant Dud for Polaroid,” *Newsweek*, 16 April 1979, press clipping, in box I.114, folder 8, Polaroid Corporation Administrative Records, Mss 658 1905–2005 P762, Baker Library, Harvard University (hereinafter referred to as PCAR, with appropriate box and folder numbers).

2. According to the U.S. Bureau of Labor Statistics’ Consumer Price Index inflation calculator, http://www.bls.gov/data/inflation_calculator.htm.

3. Langway and Malamud, n.p.

4. Langway and Malamud, n.p.

5. Louis A. Fanelli, “Polavision Price Cuts Don’t Deter Polaroid,” *Advertising Age*, 8 October 1979, press clipping, in box I.115, folder 6, PCAR.

6. Elizabeth Czach, “Polavision Instant Movies: Edwin Land’s Quest for a New Medium,” *The Moving Image*, Fall 2002, 1–24. On Polaroid photography, see Christopher Bonanos, *Instant: The Story of Polaroid* (Princeton, NJ: Princeton Architectural Press, 2012); Peter Buse, *Polaroid: The Camera Does the Rest* (Chicago: University of Chicago Press, 2016); Barbara Hitchcock, *The Polaroid Book* (Cologne: Taschen, 2009); and Mary-Kay Lombino, ed., *The Polaroid Years: Instant Photography and Experimentation* (London: Prestel, 2013).

7. Bruce Sterling, “The DEAD MEDIA Project: A Modest Proposal and a Public Appeal” (1995), <http://www.deadmedia.org/modest-proposal.html>.

8. Jonathan Sterne, *MP3: The Meaning of a Format* (Durham, NC: Duke University Press, 2013), 11.

9. Haidee Wasson, “Formatting Film Studies,” *Film Studies* 12 (Spring 2015): 58.

10. Wasson, 58.

11. Wasson, 61.

12. William L. Laurence, “One-Step Camera Is Demonstrated,” *New York Times*, 22 February 1947, 15.

13. Peter C. Wensberg, *Land’s Polaroid: A Company and the Man Who Invented It* (Boston: Houghton Mifflin Company, 1987), 223.

14. Edwin H. Land, “An Introduction to Polavision,” *Photographic Science and Engineering* 21, no. 5 (1977): 225.

15. Robert Gorman, “Instant Movies from Polaroid?” *Popular Science*, March 1974, 96–97.

16. Eelco Wolf, memorandum to subsidiary publicity managers, 7 March 1974, in Box I.324, folder 6, PCAR.

17. “Shareholders Astounded by First Public Polavision Demonstration,” *Polaroid Newsletter* 22, no. 8 (16 May 1977): 6, in box I.75, folder 8, PCAR.

18. Polaroid Corporation Amsterdam publicity office, memorandum, 23 August 1978, in box I.179, folder 4, PCAR.

19. Walter Benjamin, “The Work of Art in the Age of Its Technological Reproducibility (Second Version),” trans. Edmund Jephcott and Harry Zohn, in *1935–1938*, vol. 3 of *Selected Writings*, ed. Howard Eiland and Michael W. Jennings (Cambridge, MA: The Belknap Press of Harvard University Press, 2002), 101–33.

20. Though Polavision footage can now be transferred to video, as of March 1979 Polaroid reported being incapable of duplicating its cassettes. Cynthia von Thuna, Carpenter Center for the Arts, Harvard University, to Rose Maria Malet, director of Fundació Joan Miró, 12 March 1979, in Carpenter Center for the Arts files (CFA),

Harvard University Archives, Pusey Library, Harvard University (HUA).

21. This black-boxing may be understood as prefiguring the more recent tendency in user experience design to mask complexity and offer a surface simplicity at the level of the interface. Today, this constitutes a dominant ideology in the design of consumer hardware and software, but Polavision embraced this strategy long before it was fashionable, at a time when many technologies operated at a lower level of abstraction. Exemplary of this approach are Steve Krug, *Don't Make Me Think, Revisited: A Common Sense Approach to Web Usability, Third Edition* (Berkeley, CA: New Riders, 2014); and Jef Raskin, *The Humane Interface: New Directions for Designing Interactive Systems* (Boston: Addison Wesley, 2000).

22. Jehane R. Burns, draft of article on Charles Eames for *Polaroid Close-Up*, in box 86, folder 7, Charles and Ray Eames Papers, 1850–1989, MSS83006, United States Library of Congress (LOC). The article appeared as Jehane R. Burns, “Did You Get Pictures? Charles Eames’ SX-70 Designs,” *Polaroid Close-Up* 12, no. 3 (1981): 6–11. In the published version all references to Polavision have been excised, perhaps due to the recent, widely publicized write-down.

23. On this topic, see Beatriz Colomina, “Enclosed by Images: The Eameses’ Multimedia Architecture,” *Grey Room*, no. 2 (Winter 2001): 5–29. As Colomina notes, for the Eameses, “Spaces are defined as arrays of information defined and constantly changed by the users. This is the space of the media. . . . The reader, viewer, consumer constructs the space, participating actively in the design” (22).

24. See Seb Franklin, *Control: Digitality as Cultural Logic* (Cambridge: MIT Press, 2015).

25. The Eameses possessed, in Nieland’s words, “a hostility to any model of agency predicated on total freedom, spontaneity or the will to original self-expression, which is also, of course, an ideology of happiness”—and a position that resonates deeply with the in-built limitations of Polavision. Justus Nieland, “Making Happy, Happy-Making: The Eameses and Communication by Design,” in *Modernism and Affect*, ed. Julie Taylor (Edinburgh: Edinburgh University Press, 2015), 205–6, 222.

26. Davida Carvin, “Summary of Home Moviemaking Behavior,” 15 December 1977, in box 86, folder 1, Charles and Ray Eames papers, 1850–1989, MSS83006, LOC.

27. Richard Chalfen, “Cinema Naivete: A Study of Home Moviemaking as Visual Communication,” *Studies in the Anthropology of Visual Communication* 2, no. 2 (1975): 87–103.

28. Carvin, “Summary of Home Moviemaking Behavior”; emphasis in original.

29. Bonanos, 45.

30. Sam Yanes, interview by author, 9 November 2015.

31. “Film Maker with New Film Maker,” *San Jose News*, 2 February 1978, press clipping, in Andy Warhol Museum, Pittsburgh.

32. Excerpts of the Lennon home movies shot on Polavision are included near the end of Andrew Solt’s 1988 documentary *Imagine: John Lennon*, where they are identifiable by their exceptionally grainy quality.

33. Nonetheless, *Burgers on Parade* is notable as a prefiguration of Jørgen Leth’s five-minute document of Warhol eating a single Burger King Whopper, included in Leth’s film *66 Scenes from America* (*66 scener fra Amerika*, 1982).

34. Loose clippings sent to Stan Brakhage from Kenneth Anger, in box 3, folder 2, James Stanley Brakhage Collection, University of Colorado, Boulder (hereinafter referred to as Brakhage Collection, with appropriate box and folder numbers); emphasis in original. The source and date of the second clipping is not identified

but is likely from April 1978.

35. This letter is dated 12 April 1978 but was in all likelihood written on 12 April 1979. All dates given for the films in the letter are without years, except for *Dying Animal*, which includes “79” underlined. The listing of the films in chronological order suggests Brakhage used Polavision from October 1978 to March 1979. The mention of films completed in 1979 leads one to assume that the letter’s date of 12 April 1978 is a mistake by one year. Stan Brakhage to Fred Camper, 12 April 1978 [1979], in box 7, folder 10, Brakhage Collection.

36. This letter is dated 19 January 1978, with an asterisk marked in pencil after the year, presumably to indicate that it had been misdated. The information in the letter and Yanes’s reply date the letter to January 1979, thus pointing to the same error Brakhage made with his 12 April letter to Camper. Stan Brakhage to Sam Yanes, 10 January 1978 [1979], in box 53, folder 2, Brakhage Collection.

37. Brakhage to Yanes, 10 January 1978 [1979]; emphasis in original.

38. Brakhage to Yanes, 10 January 1978 [1979]. In this regard, Brakhage’s interest in Polavision chimes with what filmmaker Joel Schlemowitz terms the “camera roll film,” which uses a single roll of 16 mm film with no postproduction editing. As Schlemowitz writes, in language echoing Brakhage on Polavision, “With editing there is something diluted from this raw power of the pure, unadulterated footage, no matter how masterfully the material is pruned and refashioned. Perhaps the phrase of Allen Ginsberg, Chogyam Trungpa, and others, ‘First thought, best thought’ expresses this energy present in the camera-roll film? From the perspective of a filmmaker there is exciting [*sic*] about this methodology of making a film—a sense of challenging oneself to try to accomplish a work ‘perfect for what it is’ lacking any of the cosmetics of the cutting room.” Joel Schlemowitz, “First Thought, Best Thought: A Compendium of Camera Roll Films,” program notes for 4 December 2015 screening at Film-Makers’ Cooperative, New York City. I thank Josh Guilford for bringing this to my attention.

39. Czach, 3.

40. Max Underwood describes Polavision as both laserdisc and early DVD in “Inside the Office of Charles and Ray Eames,” *ptah* 2 (2005): 62. Polaroid’s official term for the filmstrip was “phototape.”

41. Draft document, “The Promise of Polavision,” 4, in box 179, folder 1, PCAR.

42. Draft document, “The Promise of Polavision,” 6. Though the system sold for only one-third the price of a Sony video player in 1977, its cassette was \$8 and ran less than three minutes, whereas a videotape cost \$17 but lasted for two hours and could be recorded over multiple times. See Victor K. McElheny, *Insisting on the Impossible: The Life of Edwin Land* (Reading, MA: Perseus Books, 1998), 422.

43. Charles Eames, unpaginated transcript of lectures delivered at University of California, Berkeley, School of Architecture, December 1953–April 1954, pt. 2, in box 315, Charles and Ray Eames Papers, 1850–1989, MSS83006, LOC. I thank Justus Nieland for drawing this citation to my attention and for his perceptive comments on this article.

44. Brakhage to Yanes, 10 January 1978 [1979].

45. On this topic, see Erika Balsom, *After Uniqueness: A History of Film and Video Art in Circulation* (New York: Columbia University Press, 2017).

46. Sam Yanes to Stan Brakhage, 30 January 1979, in box 53, folder 2, Brakhage Collection.

47. Yanes to Brakhage, 30 January 1979.

48. This accounted for one-third of the exhibition’s total committed costs of

\$26,747. “January 3, 1979 projection, Sert exhibition summary,” 3 January 1979, in CFA, HUA.

49. Robert Gardner to Josep Lluís Sert, 6 June 1978, in CFA, HUA.

50. Gardner to Sert, 6 June 1978; and Alfred Guzzetti, interview by author, 8 December 2015.

51. According to Fisher, the monitor-based presentation at Raven Row was “not an arrangement [he] was crazy about but it was more or less a matter of necessity in view of how the space in the buildings was divided.” Morgan Fisher to the author, email, 22 December 2015.

52. For an overview of additive film color processes, see Barbara Flueckiger, “Screen Processes,” Timeline of Historical Film Colors, n.d., <http://zauberklang.ch/filmcolors/cat/screen-processes/>. Polavision is the last entry on this list of additive color systems using the screen process, and little information about it is provided. Prior to Polavision, the latest additive process on Flueckiger’s timeline is Eastman Kodak’s Eastman Embossed Kinescope Recording Film, released in 1956.

53. See “Instant Replay: Police Capture Drug Smugglers on Instant Movie Film,” *Law Enforcement Communications*, February 1980, press clipping, in box I.25, folder 4-7, PCAR.

54. Yanes, interview.

55. See, for instance, Peter J. Schuyten, “Polaroid’s Land to Quit Chief Executive Position,” *New York Times*, 7 March 1980, D1, D3.

56. Sterling, “The DEAD MEDIA Project.”